

What Is Claimed Is:

1. A fusion polypeptide comprising a fragment of human serum albumin containing at least one domain or subdomain or combinations thereof and a therapeutically active polypeptide attached thereto in such a manner wherein the human serum albumin fragment optimizes the half-life of said therapeutically active polypeptide in the bloodstream depending on the molecular weight of the fragment.

2. The fusion polypeptide according to claim 1 wherein the albumin domain or subdomain is selected from the group consisting of domains I, II, III, I-II, II-III, IB-II, I-IIA and subdomains IA-IB-IIA and IB-IIA-IIB.

3. The fusion polypeptide according to claim 1 wherein the therapeutically active polypeptide is of human origin.

4. The fusion polypeptide according to claim 1, wherein said therapeutically active polypeptide comprises all or part of a polypeptide selected from the group consisting of enzymes, enzyme inhibitors, antigens, antibodies, hormones, coagulation factors, interferons, cytokines, growth factors, differentiation factors, factors involved in the genesis of bone tissues, factors involved in the resorption of bone factors, chemotactic factors, cell motility factors, migration factors, cytostatic factors, bactericidal factors, antifungal factors, plasma adhesive molecules, interstitial adhesive molecules and extracellular matrices.

5. The fusion polypeptide according to claim 1 that is prepared using recombinant means

6. The fusion polypeptide according to claim 1 wherein the half-life of the therapeutic polypeptide is extended.

7. The fusion polypeptide according to claim 1 wherein the half-life of the therapeutic polypeptide is reduced.

8. An isolated nucleic acid encoding the fusion polypeptide according to claim 1.

9. The nucleotide acid according to claim 8, further comprising a leader sequence permitting the secretion of the expressed polypeptide.

10. An expression cassette comprising the nucleotide sequence according to claim 8 under the control of a promoter region.

11. A recombinant cell comprising the nucleotide sequence according to claim 8.

12. A recombinant cell according to claim 11, which is a yeast, an animal cell, a fungus or a bacterium.

13. A process for preparing a fusion polypeptide comprising a fragment of human serum albumin containing at least one domain or subdomain or combinations thereof and a therapeutically active polypeptide attached thereto in such a manner wherein the human serum albumin fragment optimizes the half-life of said therapeutically active polypeptide in the bloodstream depending on the molecular weight of the fragment, said process comprising culturing the recombinant cell according to claim 12 under conditions which promote said expression, and recovering the polypeptide produced thereby.

14. A pharmaceutical composition comprising the fusion polypeptide according to claim 1 and a pharmaceutically acceptable vehicle, carrier or excipient.

15. The composition according to Claim 14 which is suitable for parenteral, oral, intranasal, subcutaneous, aerosolized or intravenous administration in a human or animal.

16. A vaccine comprising an immunogenic amount of the fusion polypeptide according to claim 1.

17. A method of preparing a vaccine comprising fusing to a fragment of human serum albumin containing at least one domain or subdomain or combinations thereof an immunogenic polypeptide in such a manner wherein the human serum albumin fragment optimizes the half-life of said immunogenic polypeptide in the bloodstream depending on the molecular weight of the fragment

18. A method of eliciting an immunogenic reaction in a human or animal comprising administering to said human or animal an immunologically effective amount of the fusion polypeptide according to Claim 1.

19. A method of optimizing the half-life of a therapeutic polypeptide when internally administered to humans or animals comprising forming a fusion polypeptide between said therapeutic polypeptide and a fragment of human serum albumin containing at least one domain or subdomain or combinations thereof by attaching said albumin fragment to said therapeutically active polypeptide in such a manner wherein the human serum albumin fragment optimizes the half-life of said therapeutically active polypeptide in the bloodstream depending on the molecular weight of the fragment

20. A method according to claim 19 wherein the half-life of the therapeutic polypeptide is extended.

21. A method according to claim 19 wherein the half-life of the therapeutic polypeptide is reduced.

22. A fusion polypeptide comprising a polymer of human serum albumin and a therapeutically active polypeptide attached thereto in such a manner wherein the human serum albumin polymer optimizes the half-life of said therapeutically active polypeptide in the bloodstream depending on the molecular weight of the polymer.

23. The fusion polypeptide of claim 22 wherein the polymer comprises 2 to 5 albumin monomers.

24. The fusion polypeptide of claim 22 wherein the polymer of human serum albumin is selected from the group consisting of dimers and trimers.

25. A method of optimizing the half-life of a therapeutic polypeptide when internally administered to humans or animals comprising forming a fusion polypeptide between said therapeutic polypeptide and a polymer of human serum albumin in such a manner wherein the human serum albumin polymer optimizes the half-life of said therapeutically active polypeptide in the bloodstream depending on the molecular weight of the polymer